

We claim:

1. A method for treating and/or ameliorating the symptoms of a tissue ischemic condition in a mammalian subject, comprising administering to the subject an effective amount of a beta-tocopherol enriched tocopherol composition, and by said administering, reducing tissue damage related to said tissue ischemic condition.

2. A method for treating and/or ameliorating the symptoms of a tissue ischemic condition in a mammalian subject, comprising administering to the subject an effective amount of a beta-tocopherol metabolite enriched composition, and by said administering, reducing tissue damage related to said tissue ischemic condition.

3. The method of claim 1 wherein said tissue ischemic condition is selected from the group consisting of cerebral ischemia; intestinal ischemia; spinal cord ischemia; cardiovascular ischemia; myocardial ischemia associated with myocardial infarction; myocardial ischemia associated with CHF, ischemia associated with age-related macular degeneration (AMD); liver ischemia; kidney ischemia; dermal ischemia; vasoconstriction-induced tissue ischemia; penile ischemia as a consequence of priapism; ischemia associated with thromboembolytic disease; ischemia associated with microvascular disease; and ischemia associated with diabetic ulcers, gangrenous conditions, post-trauma syndrome, cardiac arrest resuscitation, peripheral nerve damage or neuropathies.

4. The method of claim 1 wherein said tissue ischemic condition is cerebral ischemia.

5. The method of claim 1 wherein said tissue ischemia is myocardial ischemia associated with myocardial infarction.

6. The method of claim 1 wherein said tissue ischemia is myocardial ischemia associated with CHF.

7. The method of claim 1 wherein said tissue ischemia is ischemia associated with microvascular disease.

8. The method of claim 1 wherein said beta-tocopherol enriched tocopherol composition comprises at least 50% beta-tocopherol.

9. The method of claim 1 wherein said beta-tocopherol enriched tocopherol composition comprises at least 75% beta-tocopherol.

5 10. The method of claim 1 wherein said beta-tocopherol enriched tocopherol composition comprises at least 90% beta-tocopherol.

11. The method of claim 2 wherein said beta-tocopherol metabolite enriched composition comprises at least 50% beta-tocopherol metabolite.

10 12. The method of claim 2 wherein said beta-tocopherol metabolite enriched composition comprises at least 75% beta-tocopherol metabolite.

13. The method of claim 2 wherein said beta-tocopherol metabolite enriched composition comprises at least 90% beta-tocopherol metabolite.

14. The method of claim 1 wherein said composition is a nutritional composition.

15 15. The method of claim 1 wherein said composition is a pharmaceutical composition.

16. The method of claim 1 wherein said composition is administered orally.

17. The method of claim 1 wherein said composition is administered parenterally.

20 18. The method of claim 1 wherein said composition comprises a beta-tocopherol in a range of about 1 to about 1000 mg per kg body weight of said mammalian subject.

25 19. The method of claim 1 wherein said composition comprises a beta-tocopherol in a range of about 1 to about 50 mg per kg body weight of said mammalian subject.

20. The method of claim 1 wherein said composition comprises a beta-tocopherol in a range of about 10 to about 100 mg per kg body weight of said mammalian subject.

21. A method for treating and/or ameliorating the symptoms of a tissue ischemic condition in a mammalian subject, comprising administering to the subject an effective amount of a delta-tocopherol enriched tocopherol composition, and by said administering, reducing tissue damage related to said tissue ischemic condition.

22. A method for treating and/or ameliorating the symptoms of a tissue ischemic condition in a mammalian subject, comprising administering to the subject an effective amount of a delta-tocopherol metabolite enriched composition, and by said administering, reducing tissue damage related to said tissue ischemic condition.

23. The method of claim 21 wherein said tissue ischemic condition is selected from the group consisting of cerebral ischemia; intestinal ischemia; spinal cord ischemia; cardiovascular ischemia; myocardial ischemia associated with myocardial infarction; myocardial ischemia associated with CHF, ischemia associated with age-related macular degeneration (AMD); liver ischemia; kidney ischemia; dermal ischemia; vasoconstriction-induced tissue ischemia; penile ischemia as a consequence of priapism; ischemia associated with thromboembolytic disease; ischemia associated with microvascular disease; and ischemia associated with diabetic ulcers, gangrenous conditions, post-trauma syndrome, cardiac arrest resuscitation, peripheral nerve damage or neuropathies.

24. The method of claim 21 wherein said tissue ischemia is cerebral ischemia.

25. The method of claim 21 wherein said tissue ischemia is myocardial ischemia associated with myocardial infarction.

26. The method of claim 21 wherein said tissue ischemia is myocardial ischemia associated with CHF.

27. The method of claim 21 wherein said tissue ischemia is ischemia associated with microvascular disease.

28. The method of claim 21 wherein said delta-tocopherol enriched tocopherol composition comprises at least 50% delta-tocopherol.

29. The method of claim 21 wherein said delta-tocopherol enriched tocopherol composition comprises at least 75% delta-tocopherol.

30. The method of claim 21 wherein said delta-tocopherol enriched tocopherol composition comprises at least 90% delta-tocopherol.

5 31. The method of claim 22 wherein said delta-tocopherol metabolite enriched composition comprises at least 50% delta-tocopherol metabolite.

32. The method of claim 22 wherein said delta-tocopherol metabolite enriched composition comprises at least 75% delta-tocopherol metabolite.

10 33. The method of claim 22 wherein said delta-tocopherol metabolite enriched composition comprises at least 90% delta-tocopherol metabolite.

34. The method of claim 21 wherein said composition is a nutritional composition.

35. The method of claim 21 wherein said composition is a pharmaceutical composition.

15 36. The method of claim 21 wherein said composition is administered orally.

37. The method of claim 21 wherein said composition is administered parenterally.

20 38. The method of claim 21 wherein said composition comprises a delta-tocopherol in a range of about 1 to about 1000 mg per kg body weight of said mammalian subject.

39. The method of claim 21 wherein said composition comprises a delta-tocopherol in a range of about 1 to about 50 mg per kg body weight of said mammalian subject.

25 40. The method of claim 21 wherein said composition comprises a delta-tocopherol in a range of about 10 to about 100 mg per kg body weight of said mammalian subject.

41. A method for treating and/or ameliorating the symptoms of a non-cardiovascular tissue ischemic condition in a mammalian subject, comprising

administering to the subject an effective amount of a gamma-tocopherol enriched tocopherol composition, and by said administering, reducing tissue damage related to said non-cardiovascular tissue ischemic condition.

42. A method for treating and/or ameliorating the symptoms of a non-cardiovascular tissue ischemic condition in a mammalian subject, comprising administering to the subject an effective amount of a gamma-tocopherol metabolite enriched composition, and by said administering, reducing tissue damage related to said non-cardiovascular tissue ischemic condition.

43. The method of claim 41 wherein said non-cardiovascular tissue ischemic condition is selected from the group consisting of intestinal ischemia; spinal cord ischemia; ischemia associated with age-related macular degeneration (AMD); liver ischemia; kidney ischemia; dermal ischemia; vasoconstriction-induced tissue ischemia; penile ischemia as a consequence of priapism; ischemia associated with thromboembolytic disease; ischemia associated with microvascular disease; and ischemia associated with diabetic ulcers, gangrenous conditions, post-trauma syndrome, peripheral nerve damage or neuropathies.

44. The method of claim 41 wherein said gamma-tocopherol enriched tocopherol composition comprises at least 60% gamma-tocopherol.

45. The method of claim 41 wherein said gamma-tocopherol enriched tocopherol composition comprises at least 65% gamma-tocopherol.

46. The method of claim 41 wherein said gamma-tocopherol enriched tocopherol composition comprises at least 70% gamma-tocopherol.

47. The method of claim 41 wherein said gamma-tocopherol enriched tocopherol composition comprises at least 75% gamma-tocopherol.

48. The method of claim 41 wherein said gamma-tocopherol enriched tocopherol composition comprises at least 80% gamma-tocopherol.

49. The method of claim 41 wherein said gamma-tocopherol enriched tocopherol composition comprises at least 85% gamma-tocopherol.

50. The method of claim 41 wherein said gamma-tocopherol enriched tocopherol composition comprises at least 90% gamma-tocopherol.

51. The method of claim 41 wherein said gamma-tocopherol enriched tocopherol composition comprises at least 95% gamma-tocopherol.

52. The method of claim 41 wherein said gamma-tocopherol enriched tocopherol composition comprises at least 98% gamma-tocopherol.

53. The method of claim 42 wherein said gamma-tocopherol metabolite enriched composition comprises at least 80% gamma-tocopherol metabolite.

54. The method of claim 42 wherein said gamma-tocopherol metabolite enriched composition comprises at least 85% gamma-tocopherol metabolite.

55. The method of claim 42 wherein said gamma-tocopherol metabolite enriched composition comprises at least 90% gamma-tocopherol metabolite.

56. The method of claim 42 wherein said gamma-tocopherol metabolite enriched composition comprises at least 95% gamma-tocopherol metabolite.

57. The method of claim 42 wherein said gamma-tocopherol metabolite enriched composition comprises at least 98% gamma-tocopherol metabolite.

58. The method of claim 41 wherein said composition is a nutritional composition.

59. The method of claim 41 wherein said composition is a pharmaceutical composition.

60. The method of claim 41 wherein said composition is administered orally.

61. The method of claim 41 wherein said composition is administered parenterally.

62. The method of claim 41 wherein said composition comprises gamma-tocopherol in a range of about 1 to about 1000 mg per kg body weight of said mammalian subject.

63. The method of claim 41 wherein said composition comprises gamma-tocopherol in a range of about 1 to about 50 mg per kg body weight of said mammalian subject.

64. The method of claim 41 wherein said composition comprises gamma-tocopherol in a range of about 10 to about 100 mg per kg body weight of said mammalian subject.

65. A method for treating and/or ameliorating the symptoms of a tissue ischemic condition in a mammalian subject, comprising administering to the subject an effective amount of a composition comprising a flavonoid and/or a flavonoid derivative, and by said administering, reducing tissue damage related to said tissue ischemic condition, wherein said flavonoid specifically excludes diosmin and hesperidin.

66. The method of claim 65 wherein said tissue ischemic condition is selected from the group consisting of intestinal ischemia; spinal cord ischemia; ischemia associated with age-related macular degeneration (AMD); liver ischemia; kidney ischemia; dermal ischemia; vasoconstriction-induced tissue ischemia; penile ischemia as a consequence of priapism; ischemia associated with thromboembolytic disease; ischemia associated with microvascular disease; and ischemia associated with diabetic ulcers, gangrenous conditions, post-trauma syndrome, peripheral nerve damage or neuropathies.

67. The method of claim 65 wherein said tissue ischemic conditions is cerebral ischemia.

68. The method of claim 65 wherein said flavonoid is chelated to a metal.

69. The method of claim 68 wherein said metal is Fe.

70. The method of claim 65 wherein said flavonoid is selected from the group consisting of chrysin, daidzein, hesperetin, luteolin, quercetin, bromoquercetin, rutin, and biochanin.

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71. The method of claim 65 wherein said composition comprises two flavonoids.

72. The method of claim 65 wherein said flavonoid is quercetin.

73. The method of claim 65 wherein said flavonoid is hesperetin.

5 74. The method of claim 65 wherein said flavonoid is bromoquercetin.

75. The method of claim 65 wherein said composition comprises quercetin and hesperetin.

76. The method of claim 65 wherein said composition is a nutritional composition.

10 77. The method of claim 65 wherein said composition is a pharmaceutical composition.

78. The method of claim 65 wherein said composition is administered orally.

79. The method of claim 65 wherein said composition is administered parenterally.

15 80. The method of claim 65 wherein said composition comprises a flavonoid in a range of about 1 to about 1000 mg per kg body weight of said mammalian subject.

81. The method of claim 65 wherein said composition comprises a flavonoid in a range of about 1 to about 25 mg per kg body weight of said mammalian subject.

20 82. A method for treating and/or ameliorating the symptoms of a tissue ischemic condition in a mammalian subject, comprising administering to the subject an effective amount of a composition comprising a non-alpha tocopherol and a flavonoid, wherein said flavonoid is selected from the group consisting of chrysin, daidzein, diosmin, hesperetin, hesperidin, luteolin, quercetin, bromoquercetin, rutin and biochanin, and by said administering, reducing tissue damage related to said tissue ischemic condition.

83. The method of claim 82 wherein said tissue ischemic condition is cerebral ischemia.

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84. The method of claim 82 wherein said tissue ischemic condition is cardiovascular ischemia.

85. The method of claim 82 wherein said non-alpha tocopherol is selected from the group consisting of gamma-tocopherol, beta-tocopherol, delta-tocopherol, a gamma-tocopherol metabolite, a beta-tocopherol metabolite, and a delta-tocopherol metabolite.

86. The method of claim 82 wherein said non-alpha tocopherol is gamma-tocopherol.

87. The method of claim 82 wherein said non-alpha-tocopherol is a gamma-tocopherol metabolite.

88. The method of claim 82 wherein said composition comprises gamma-tocopherol and two flavonoids.

89. The method of claim 82 wherein said composition comprises gamma-tocopherol, quercetin and hesperetin.

90. The method of claim 82 wherein said flavonoid is metal chelated.

91. The method of claim 82 wherein said composition comprises gamma-tocopherol in the range of about 1 to about 1000 mg/kg body weight of mammalian subject, hesperetin in the range of about 1 to about 1000 mg/kg body weight of mammalian subject and quercetin in a range of about 1 to about 1000 mg/kg body weight of mammalian subject.

92. The method of claim 82 wherein said composition comprises gamma-tocopherol in the range of about 1 to about 50 mg/kg body weight of mammalian subject, hesperetin in the range of about 1 to about 25 mg/kg body weight of mammalian subject and quercetin in a range of about 1 to about 25 mg/kg body weight of mammalian subject.

93. The method of claim 82 wherein said composition comprises gamma-tocopherol in the range of about 10 to about 100 mg/kg body weight of mammalian subject, hesperetin in the range of about 10 to about 100 mg/kg body weight of

mammalian subject and quercetin in a range of about 10 to about 100 mg/kg body weight of mammalian subject.

94. The method of claim 82 wherein said composition is a nutritional composition.

5 95. The method of claim 82 wherein said composition is a pharmaceutical composition.

96. The method of claim 82 wherein said composition is administered orally.

97. The method of claim 82 wherein said composition is administered parenterally.

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